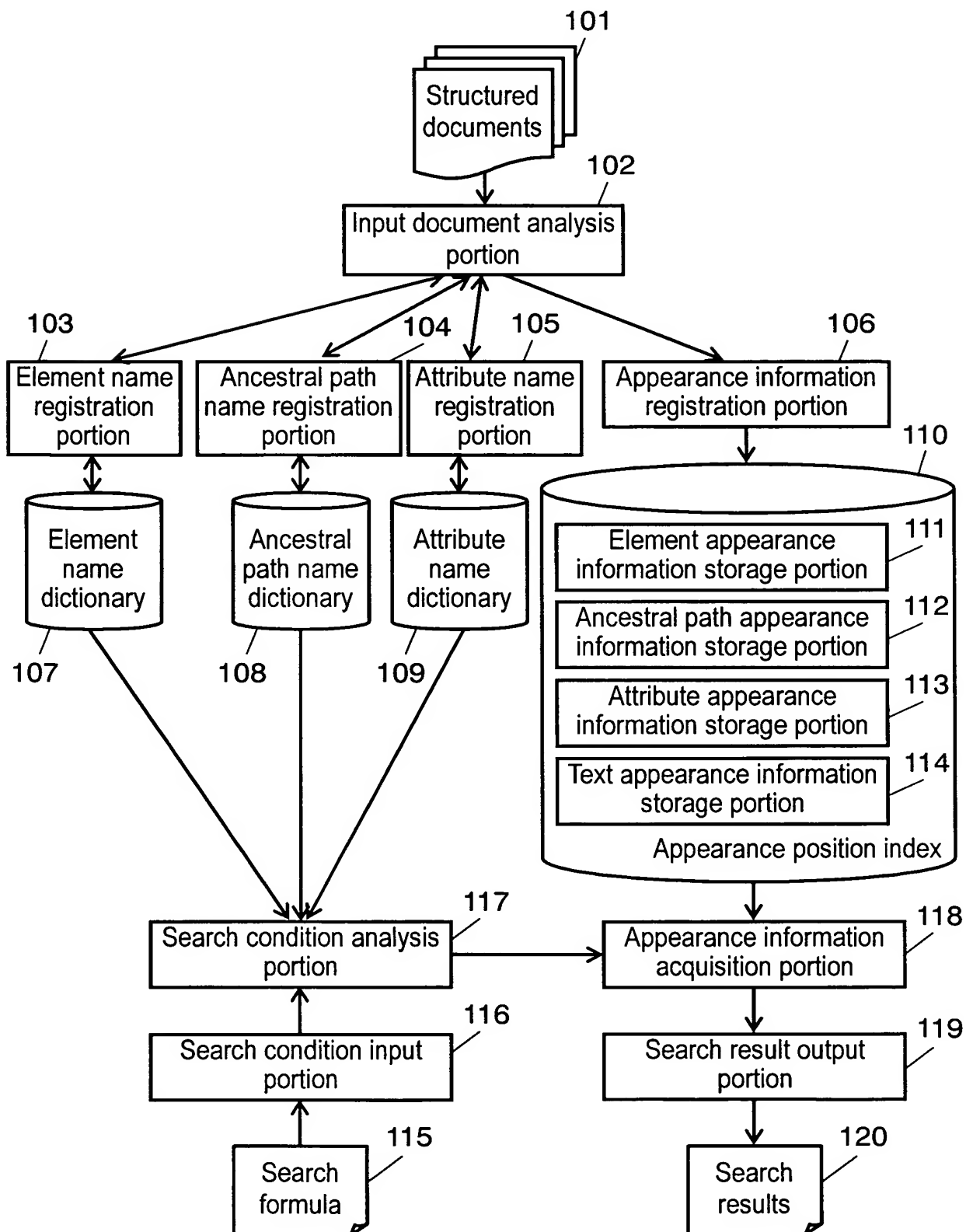


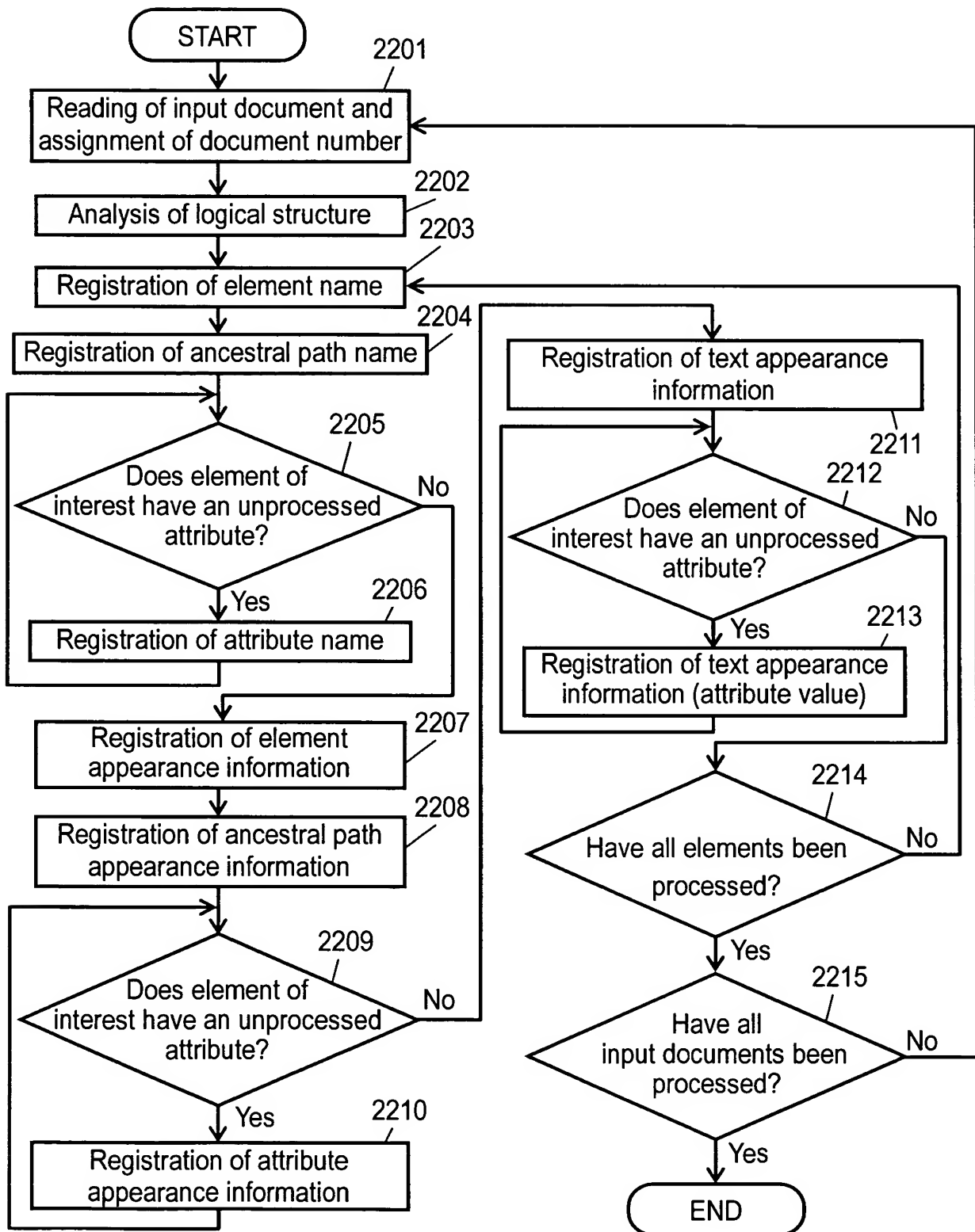
1/29

FIG. 1



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FIG. 2



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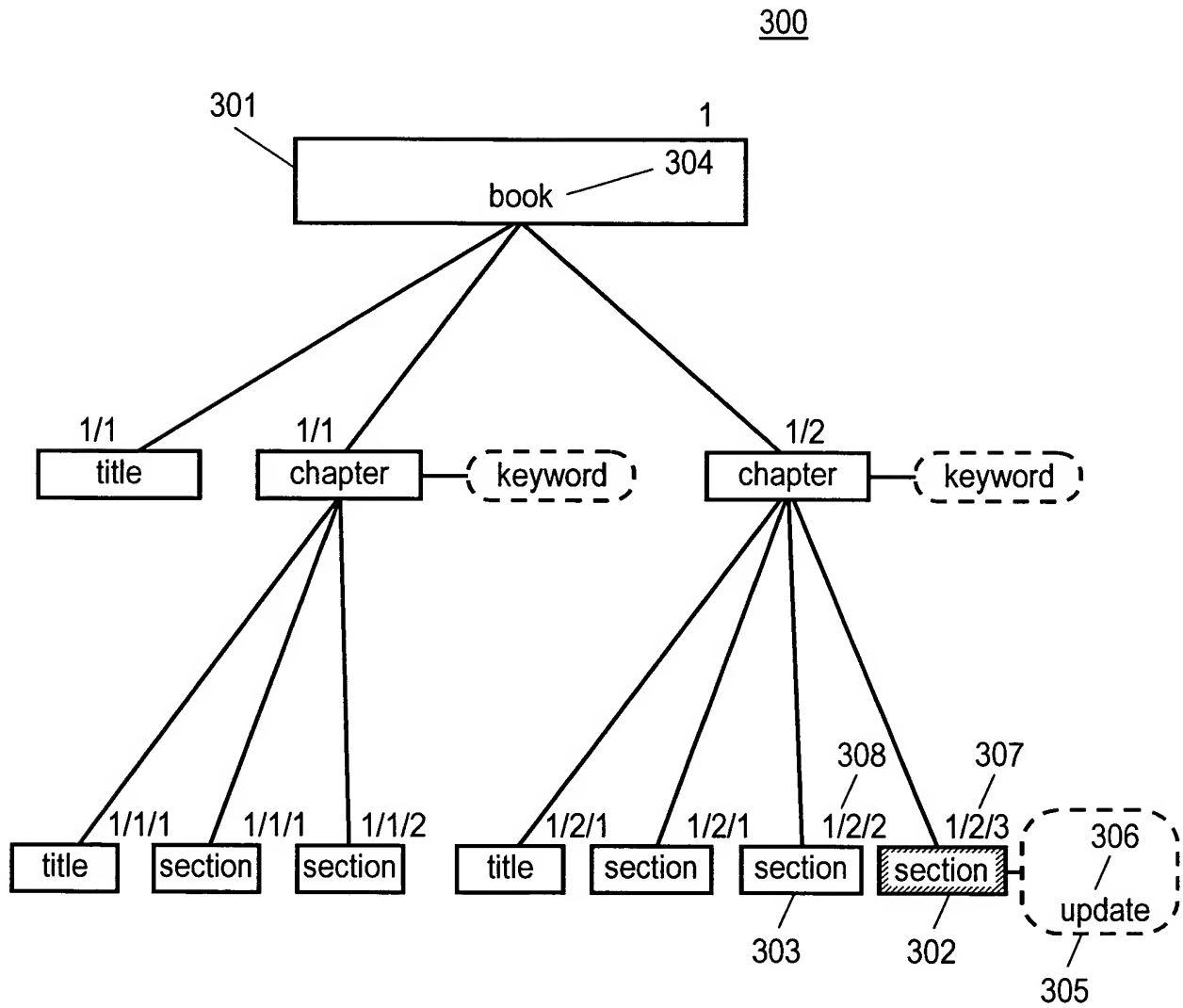
## FIG. 3

101a

```
<book>
  <title> document search </title>
  <chapter keyword = "history">
    <title> history of document search </title>
    <section> keyword search is ... </section>
    <section> then, the full text search is ... </section>
  </chapter>
  <chapter keyword = "index">
    <title> search method </title>
    <section> using extraction by longest match principle < /section>
    <section> n-gram search method is ... < /section>
    <section update> "200406" Newly, a maximum word search method is
                                     </section> </chapter>
  </chapter>
</book>
```

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FIG. 4



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FIG. 5

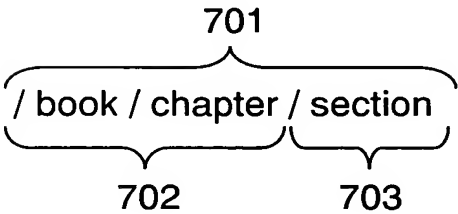


FIG. 6

407

Element name ID	Element name
1	book
2	title
3	chapter
4	section

FIG. 7

408

Ancestral path name ID	Ancestral path name
1	/
2	/ book
3	/ book / chapter

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FIG. 8

409

Attribute name ID	Attribute name
1	keyword
2	update

FIG. 9

410

Character	docu-	ment	sear-	ch	docu-	ment	sear-	ch	of	his-	tory
Character position	0	1	2	3	4	5	6	7	8	9	10

ke	y	w	or	d	sear-	ch	is	,	...
11	12	13	14	15	16	17	18	19	

FIG. 10A

501

<u>502</u>	<u>503</u>	<u>504</u>	<u>505</u>	<u>506</u>	<u>507</u>
Element name ID	Document No.	Character position	Number of characters	Ancestral path name ID	Order of branches
4	1	115	40	3	1/2/3

FIG. 10B

302

<u>322</u>	
<section update "200406">	Newly, a maximum word search method is ...</section>

321

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FIG. 11

511

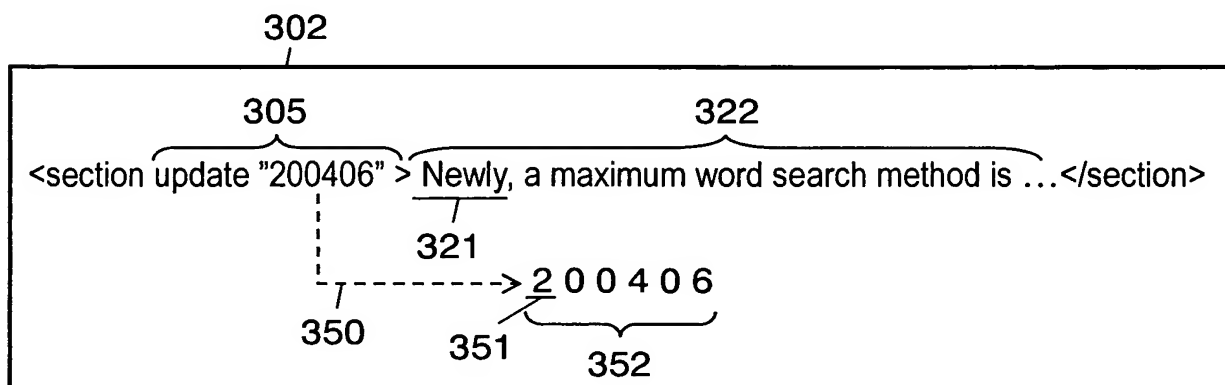
506 Ancestral path name ID	503 Document No.	504 Character position	505 Number of characters	502 Element name ID	507 Order of branches
3	1	115	40	4	1/2/3

FIG. 12A

521

522 Attribute name ID	503 Document No.	504 Character position	505 Number of characters	506 Ancestral path name ID	502 Element name ID	507 Order of branches
2	1	115	6	3	4	1/2/3

FIG. 12B



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# FIG. 13

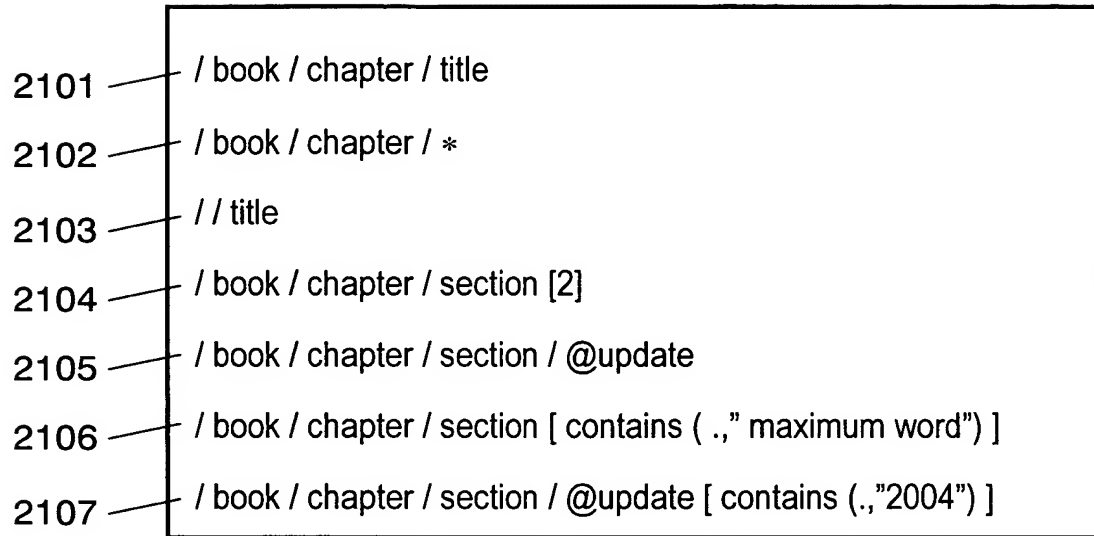
531

532 Partial character string	503 Document No.	504 Character position	506 Ancestral path name ID	502 Element name ID	522 Attribute name ID	507 Order of branches	
new-	1	115	3	4	0	1/2/3	1201
ly	1	116	3	4	0	1/2/3	
max-	1	117	3	4	0	1/2/3	
maximum	1	118	3	4	0	1/2/3	
-mum word	1	119	3	4	0	1/2/3	
word	1	120	3	4	0	1/2/3	1202
"20"	1	115	3	4	2	1/2/3	
"00"	1	116	3	4	2	1/2/3	
"04"	1	117	3	4	2	1/2/3	
"40"	1	118	3	4	2	1/2/3	
"06"	1	119	3	4	2	1/2/3	



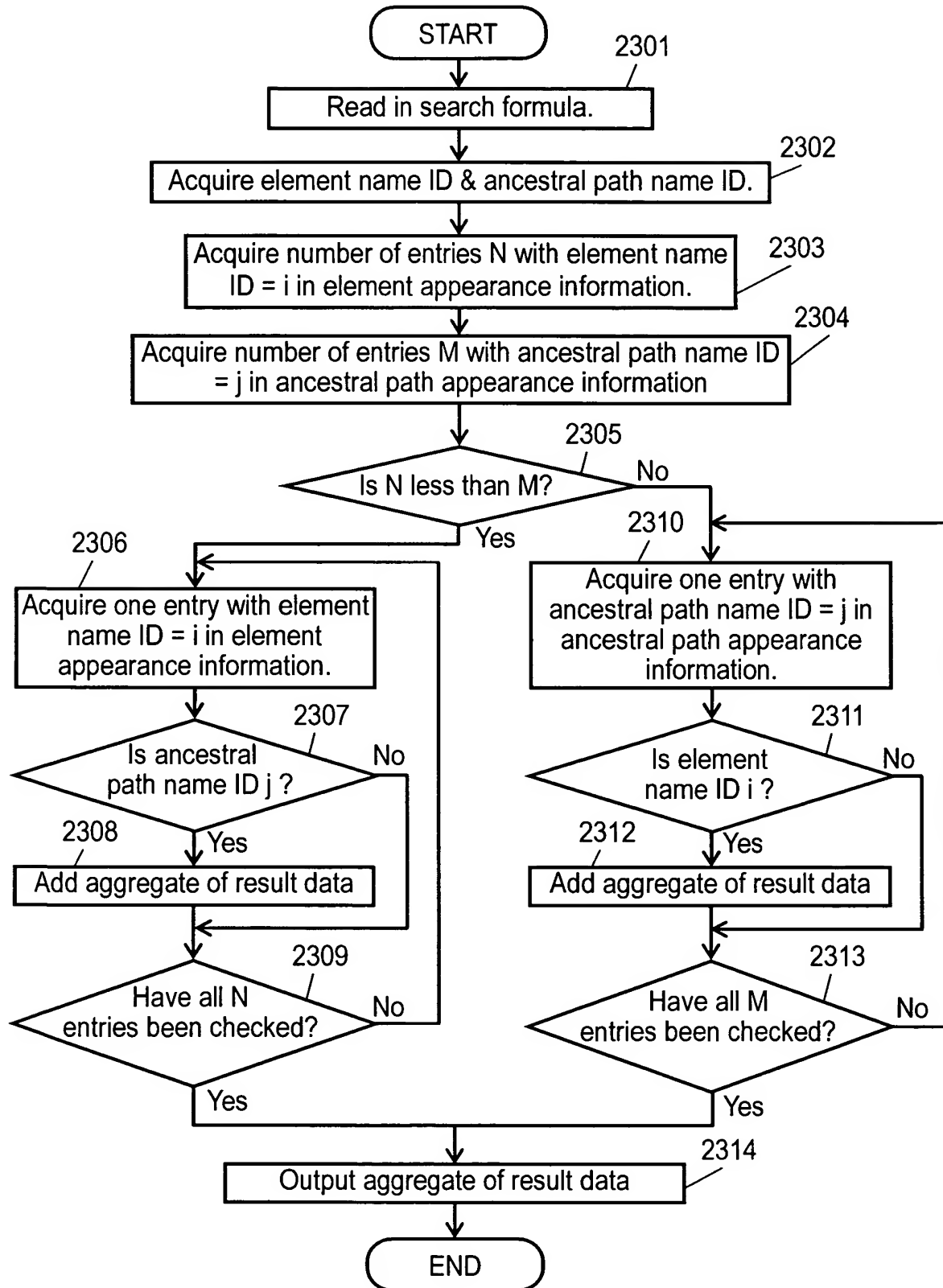
9/29

## FIG. 14



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FIG. 15



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FIG. 16A

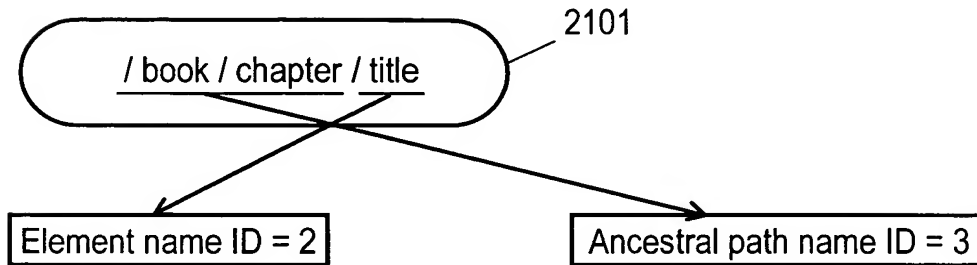


FIG. 16B

Element name ID	Document NO.	Character position	Number of characters	Ancestral path name ID	Order of branches
2	1	0	4	2	1/1
	1	4	7	3	1/1/1
	1	59	4	3	1/2/1
	2	0	6	2	1/1
	4	0	8	2	1/1
	4	24	6	3	1/1/1
	7	0	5	2	1/1
	9	7	4	3	1/1/1
3					

1301

FIG. 16C

(Document No., Ancestral path name ID, Element name ID, Attribute name ID, Order of branches)  
 = { (1, 3, 2, 0, 1/1/1),  
 (1, 3, 2, 0, 1/2/1),  
 (4, 3, 2, 0, 1/1/1),  
 (9, 3, 2, 0, 1/1/1) }

1302

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FIG. 17A

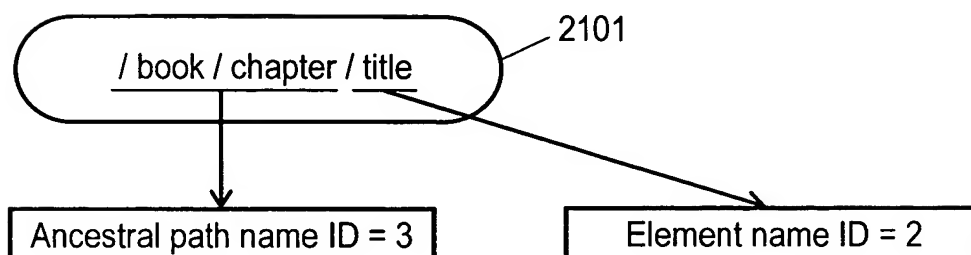


FIG. 17B

Ancestral path name ID	Document No.	Character position	Number of characters	Element name ID	Order of branches
			⋮		
3	1	4	7	2	1/1/1
	1	11	28	4	1/1/1
	1	39	20	4	1/1/2
	1	59	4	2	1/2/1
	1	63	30	4	1/2/1
	1	93	22	4	1/2/2
	1	115	40	4	1/2/3
	3	5	25	4	1/1/1
	4	24	6	2	1/1/1
	4	60	15	4	1/1/1
	6	64	6	4	1/1/1
	9	7	4	2	1/1/1
4			⋮		

1401

FIG. 17C

(Document No., Ancestral path name ID, Element name ID, Attribute name ID, Order of branches)  
 = { (1, 3, 2, 0, 1/1/1),  
 (1, 3, 2, 0, 1/2/1),  
 (4, 3, 2, 0, 1/1/1),  
 (9, 3, 2, 0, 1/1/1) }

1402

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FIG. 18A

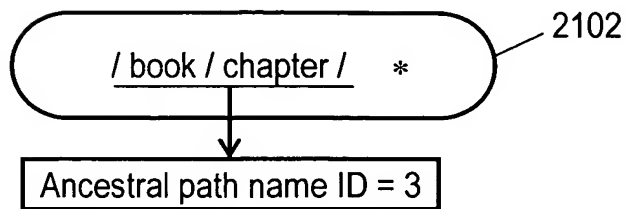


FIG. 18B

Ancestral path name ID	Document No.	Character position	Number of characters	Element name ID	Order of branches
			⋮		
3	1	4	7	2	1/1/1
	1	11	28	4	1/1/1
	1	39	20	4	1/1/2
	1	59	4	2	1/2/1
	1	63	30	4	1/2/1
	1	93	22	4	1/2/2
	1	115	40	4	1/2/3
	3	5	25	4	1/1/1
	4	24	6	2	1/1/1
	4	60	15	4	1/1/1
	6	64	6	4	1/1/1
	9	7	4	2	1/1/1
4			⋮		

1501

FIG. 18C

(Document No. Ancestral path name ID, Element name ID, Attribute name ID, Order of branches)  
 = { (1, 3, 2, 0, 1/1/1),  
 (1, 3, 4, 0, 1/1/1),  
 .....  
 (6, 3, 4, 0, 1/1/1),  
 (9, 3, 2, 0, 1/1/1) }

1502

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FIG. 19A

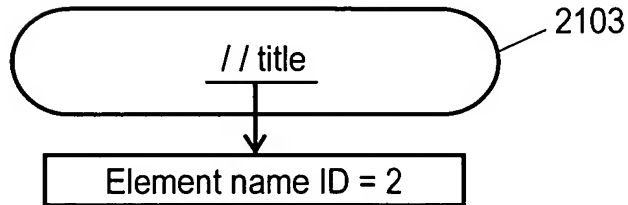


FIG. 19B

Element name ID	Document No.	Character position	Number of characters	Ancestral path name ID	Order of branches
	⋮				
2	1	0	4	2	1/1
	1	4	7	3	1/1/1
	1	59	4	3	1/2/1
	2	0	6	2	1/1
	4	0	8	2	1/1
	4	24	6	3	1/1/1
	7	0	5	2	1/1
	9	7	4	3	1/1/1
3	⋮				

1601

FIG. 19C

(Document No., Ancestral path name ID, Element name ID, Attribute name ID, Order of branches)

= { (1, 2, 2, 0, 1/1),  
 (1, 3, 2, 0, 1/1/1),  
 .....,  
 (7, 2, 2, 0, 1/1),  
 (9, 3, 2, 0, 1/1/1) }

1602

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FIG. 20A

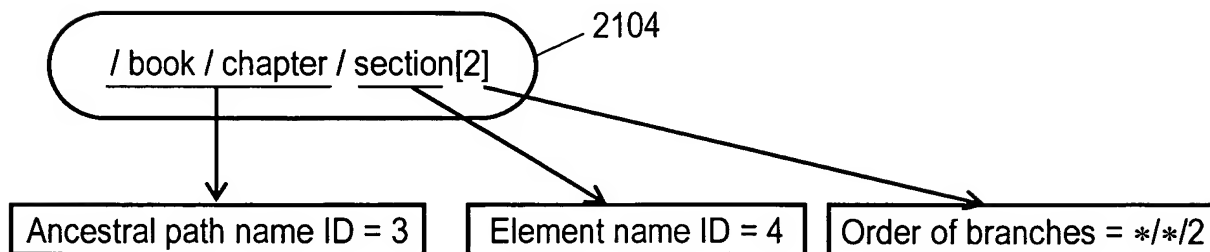


FIG. 20B

Ancestral path name ID	Document No.	Character position	Number of characters	Element name ID	Order of branches
	1	⋮			
3	1	4	7	2	1/1/1
	1	11	28	4	1/1/1
	1	39	20	4	1/1/2
	1	59	4	2	1/2/1
	1	63	30	4	1/2/1
	1	93	22	4	1/2/2
	1	115	40	4	1/2/3
	3	5	25	4	1/1/1
	4	24	6	2	1/1/1
	4	60	15	4	1/1/1
	6	64	6	4	1/1/1
	9	7	4	2	1/1/1
4		⋮			

FIG. 20C

(Document No., Ancestral path name ID, Element name ID, Attribute name ID, Order of branches)  
 = { (1, 3, 4, 0, 1/1/2),  
 (1, 3, 4, 0, 1/2/2) }

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FIG. 21A

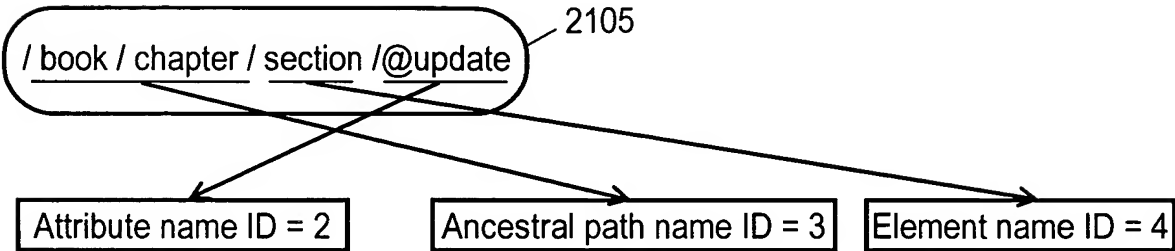


FIG. 21B

Attribute name ID	Document No.	Character position	Number of character	Ancestral path name ID	Element name ID	Order of branches
			⋮			
2	1	115	6	3	4	1/2/3
	2	8	4	2	2	1/1
	5	60	6	3	4	1/1/2
	8	32	8	3	2	1/2/1
3			⋮			

1801

FIG. 21C

(Document No., Ancestral path name ID, Element name ID, Attribute name ID, Order of branches)  
={ ( 1 , 3 , 4 , 2 , 1/2/3 ),  
( 5 , 3 , 4 , 2 , 1/1/2 ) }

1802



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FIG. 22A

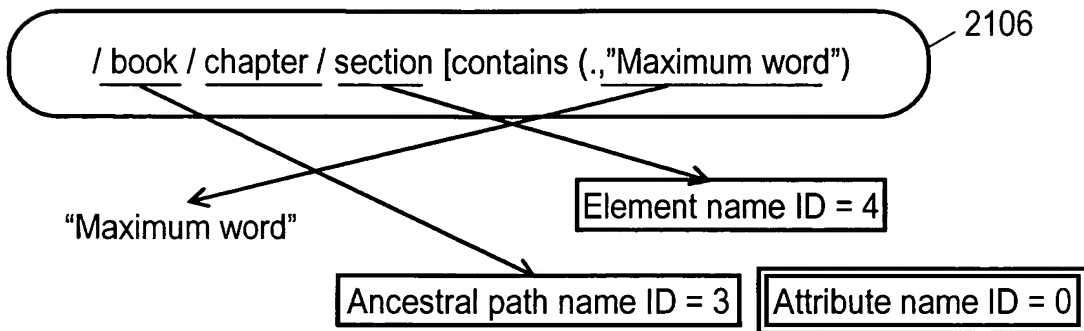


FIG. 22B

Partial character string	Document No.	Character position	Ancestral path name ID	Element name ID	Attribute name ID	Order of branches	
			⋮				
"Maximum"	1	118	3	4	0	1/2/3	1901
	2	86	3	4	0	1/1/1	
	3	24	2	2	0	1/1	
	4	62	3	4	0	1/1/1	
	8	77	3	4	2	1/1/1	
			⋮				
"Word"	1	120	3	4	0	1/2/3	1902
	3	26	2	2	0	1/1	
	4	64	3	4	0	1/1/1	
	8	79	3	4	1	1/1/1	
			⋮				

FIG. 22C

(Document No., Ancestral path name ID, Element name ID, Attribute name ID, Order of branches)

= { ( 1 , 3 , 4 , 0 , 1/2/3 ) ,  
 ( 4 , 3 , 4 , 0 , 1/1/1 ) }

1903

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FIG. 23A

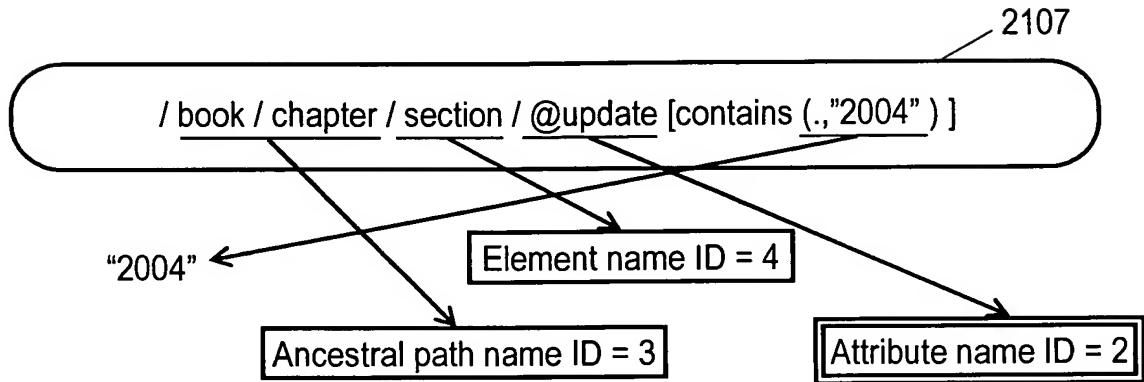


FIG. 23B

Partial character string	Document No.	Character position	Ancestral path name ID	Element name ID	Attribute name ID	Order of branches	
			⋮				
"20"	1	115	3	4	2	1/2/3	2001
	2	15	3	4	0	1/1/1	
	3	24	2	2	0	1/1	
	5	21	3	4	2	1/1/1	
	7	54	3	4	1	1/1/1	
	2004		⋮				
"04"	1	117	3	4	2	1/2/3	2002
	3	26	2	2	0	1/1	
	5	23	3	4	2	1/1/1	
	7	56	3	4	1	1/1/1	
	2005		⋮				

FIG. 23C

(Document No., Ancestral path name ID, Element name ID, Attribute name ID, Order of branches)  
 = { ( 1 , 3 , 4 , 2 , 1/2/3 ),  
 ( 5 , 3 , 4 , 2 , 1/1/1 ) }

2003

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FIG. 24

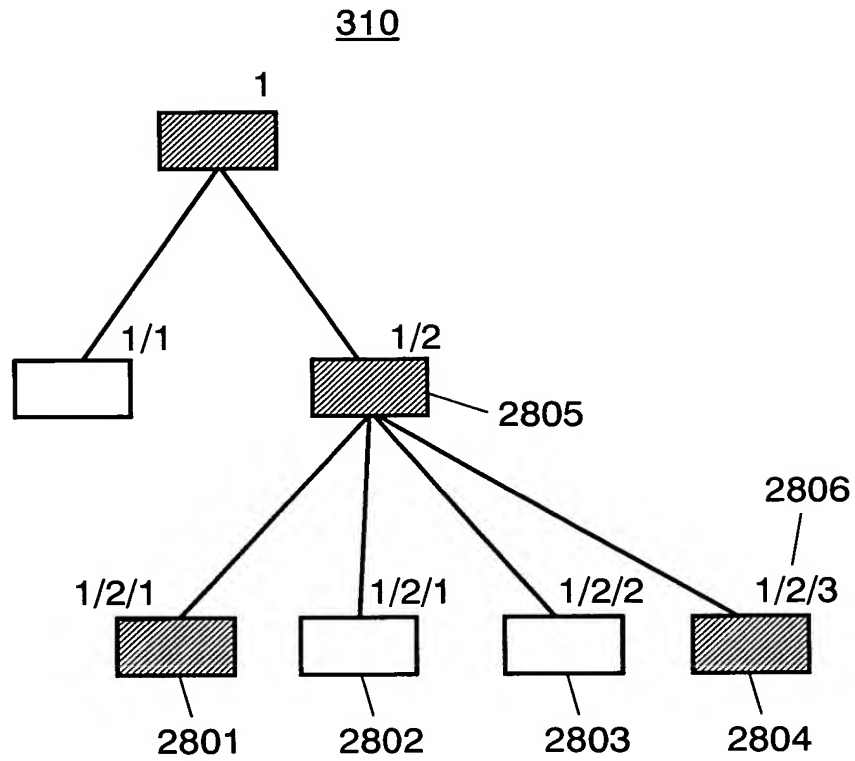


FIG. 25A

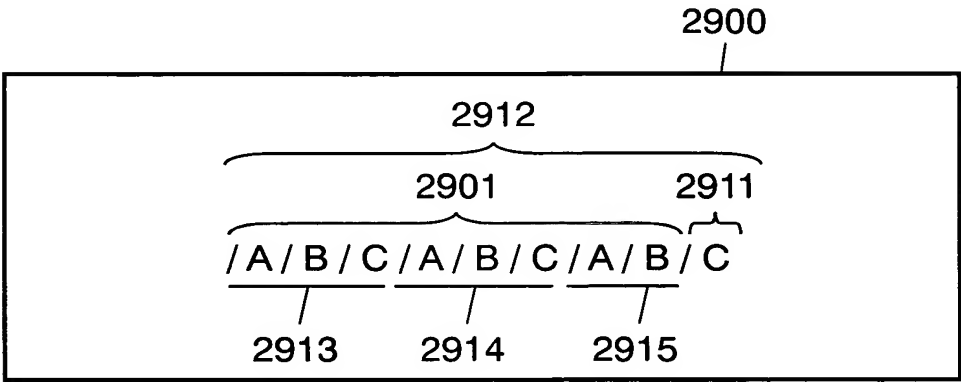
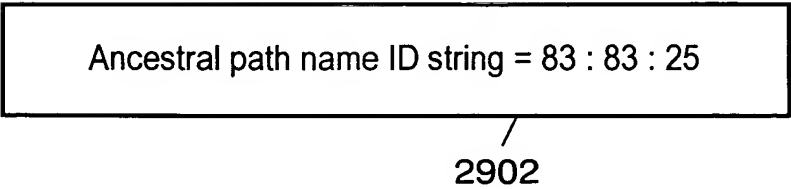


FIG. 25B

2904 Ancestral path ID	2905 Ancestral path name	2903
1	/	
.....	.....	
25	/ A / B	
.....	.....	
83	/ A / B / C	
.....	.....	

FIG. 25C



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FIG. 26

<u>541</u>						
502 /	503 /	504 /	505 /	506 /	507 /	548 /
Element name ID	Document No.	Character position	Number of characters	Ancestral path name ID	Order of branches	Order of empty elements
10	1	100	20	83 : 25	1/2/3/1/1/2	1/1/2/1/2/1

FIG. 27

<u>551</u>						
506 /	503 /	504 /	505 /	502 /	507 /	548 /
Ancestral path name ID	Document No.	Character position	Number of characters	Element name ID	Order of branches	Order of empty elements
83 : 25	1	100	20	10	1/2/3/1/1/2	1/1/2/1/2/1

FIG. 28

/ A / B / X / following – sibling : : Y

3201

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FIG. 29A

Ancestral path name ID	Document No.	Character position	Number of characters	Element name ID	Order of branches	Order of empty elements
25	.....					
	-----					
	2	80	10	10	1/1/1	1/2/1
	.....					
	2	120	20	14	1/1/1	1/2/1
26	5	100	0	10	1/2/1	1/1/1
	5	100	30	14	1/2/1	1/2/2
	-----					

Element name X

Element name Y

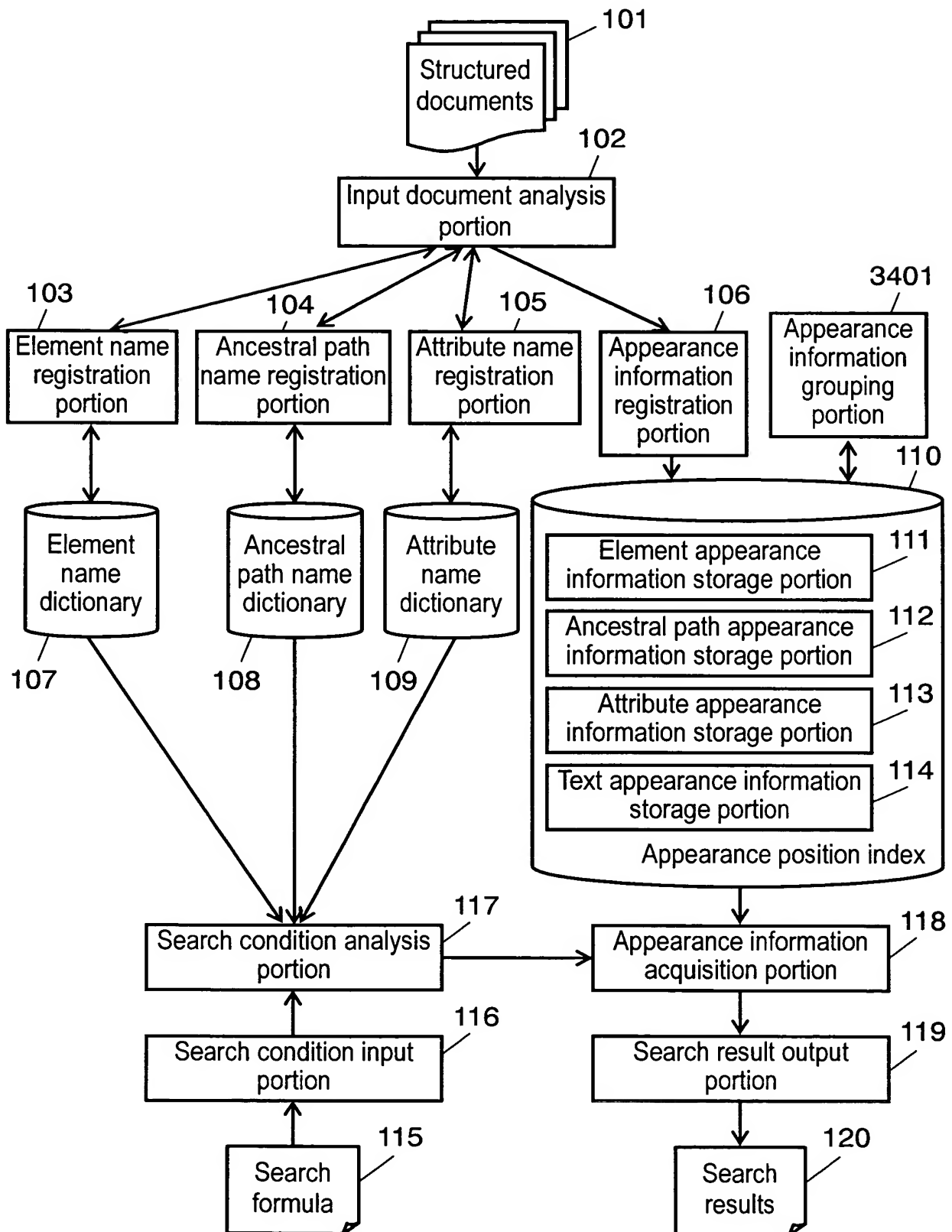
FIG. 29B

(Document No., Ancestral path name ID, Element name ID, Attribute name ID, Order of branches, Order of empty elements)  
={ ( 2 , 25 , 14 , 0 , 1/1/1 , 1/2/1 ),  
  ( 5 , 25 , 14 , 0 , 1/2/1 , 1/1/2 ) }

3303

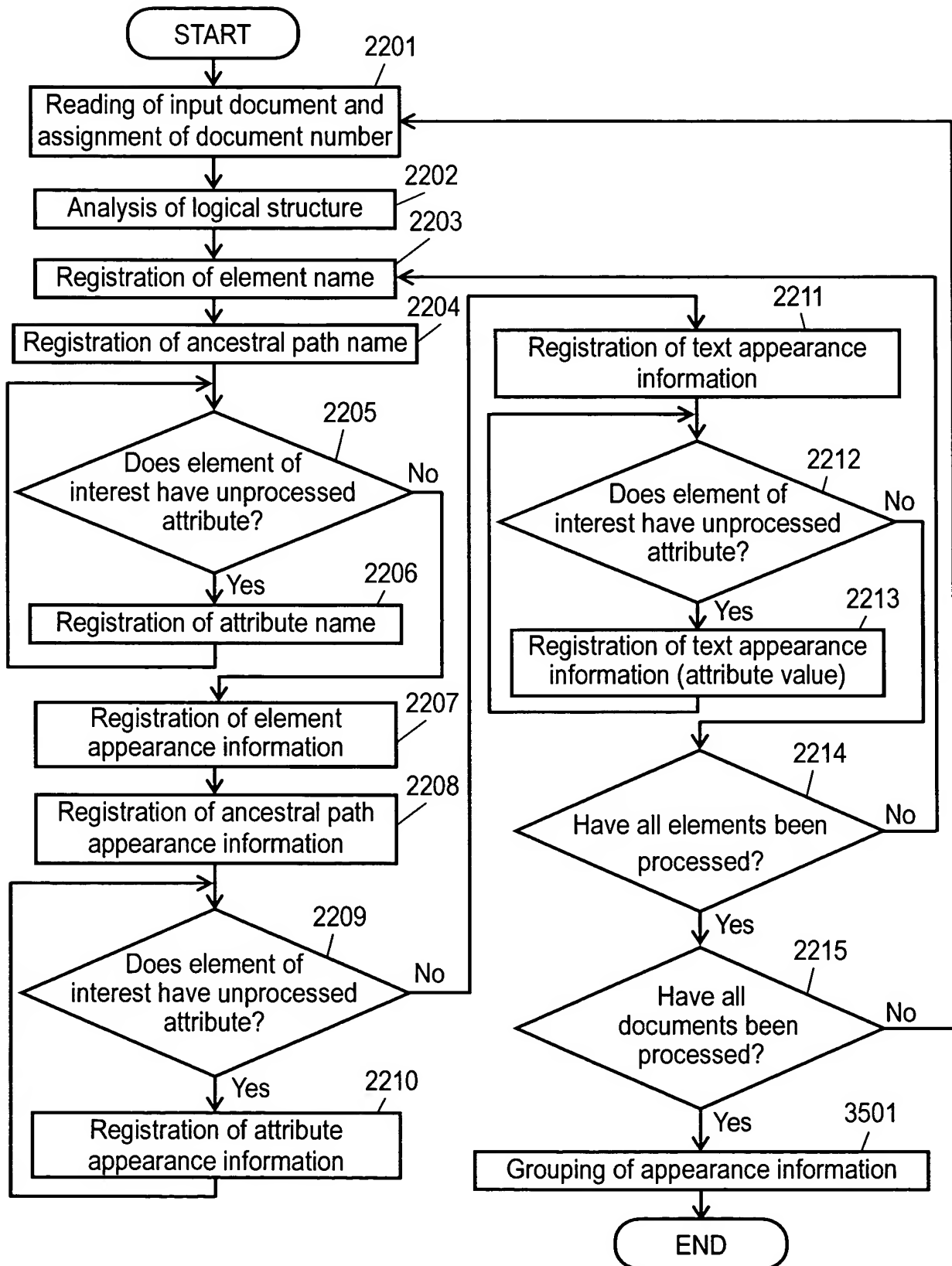
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FIG. 30



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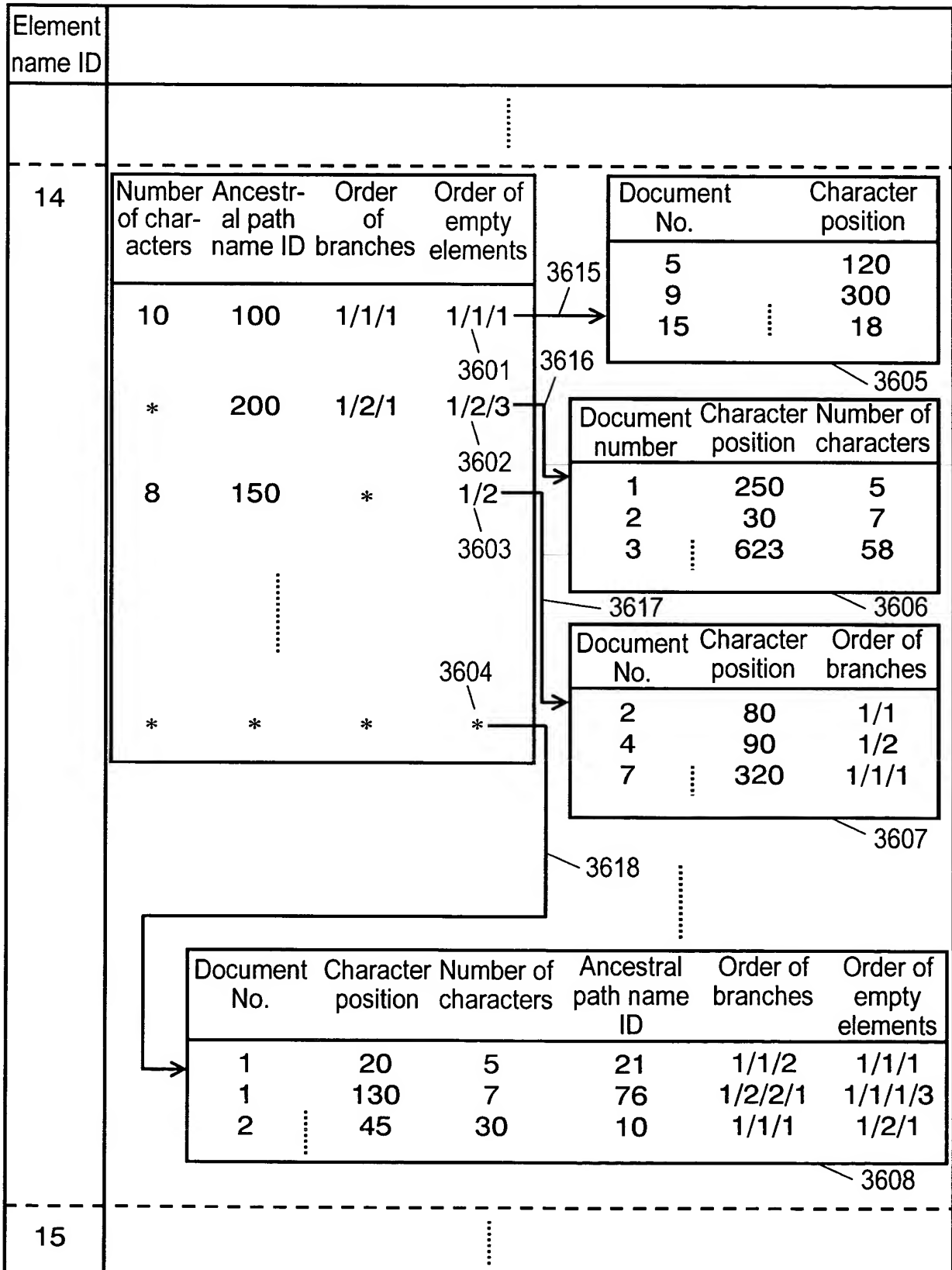
FIG. 31





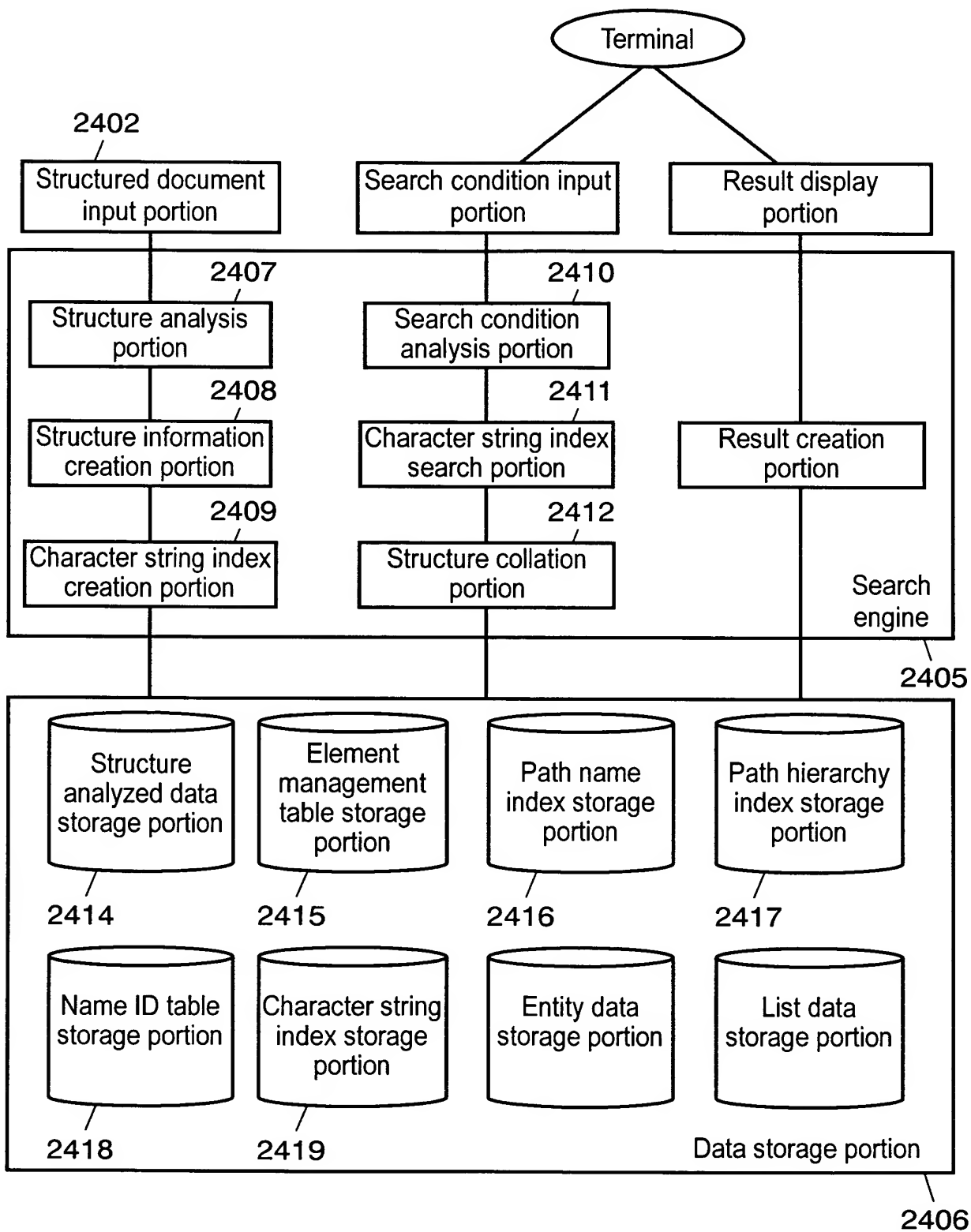
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FIG. 32



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FIG. 33



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## FIG. 34

2501

2502 Search unit identifier	2503 Document No.	2504 Path name ID	2505 Path hierarchy ID	2506 Name ID
1	1	N2	L2	T3
2	1	N3	L2	T4
3	1	N3	L6	T4
4	1	N4	L2	T5
5	1	N7	L3	T8
6	1	N8	L3	T9
7	1	N10	L4	T11
8	1	N11	L4	T9
⋮	⋮	⋮	⋮	⋮

FIG. 35A

< title > structured document management < /title >

FIG. 35B

<u>2602</u>			
	2603	2604	2605
2606	Chain of characters	Search unit identifier	Character position No.
	structur-	1	1
	-red	1	2
	-ed do-	1	3
	document	1	4
	ment mana-	1	5
	management	1	6

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FIG. 36A

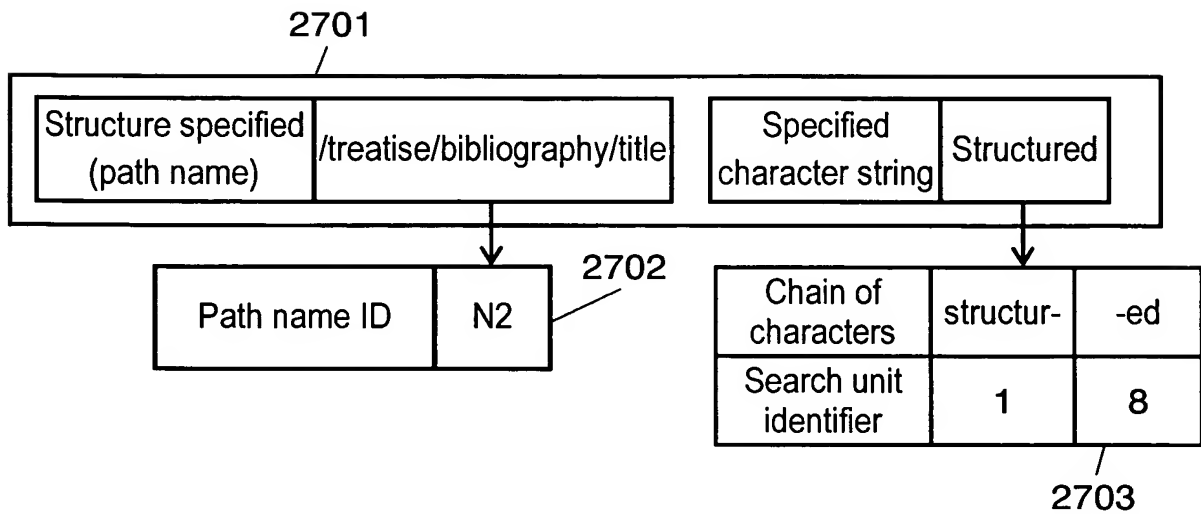


FIG. 36B

2501

Search unit identifier	Document No.	Path name ID	Path hierarchy ID	Name ID
1	1	N2	L2	T3
⋮	⋮	⋮	⋮	⋮
8	1	N11	L4	T9
⋮	⋮	⋮	⋮	⋮

FIG. 36C

Search unit identifier	Document No.
1	1